

## ABSTRACT

A finite element scheme based on primitive variables is developed to predict primarily the extensively studied problem of the coupled motion of a viscous fluid and an elastically mounted cylinder at low Reynolds numbers . A stable numerical algorithm based on a symmetrisation scheme and condensation of pressure and secondary velocity variables is formulated to identify various transition points corresponding to increasing Reynolds number of flow . Formation, growth and decay of various flow subdomains are carefully traced. The coupled effect of the moving body and the surrounding flow is tracked and the effect of stiffness of the mounting of cylinder on the flow pattern is discussed. Results are mostly presented in graphical form .

**KEYWORDS** : Fluid-structure Interaction , Finite element , Reynolds number, primitive variables , elastically mounted cylinder,